

**Notice of Allowability**

Application No.

10/613,214

Examiner

Anjan K. Deb

Applicant(s)

WESTERLING ET AL.

Art Unit

2858

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 08/31/2005.
2. ☒ The allowed claim(s) is/are 1,3-19 and 22-41.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to amendment filed 08/31/2005.

#### ***Examiner's Amendment***

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Replace abstract with following new abstract,

#### **Abstract**

A radar level gauge for measuring the level of a surface of a product stored in a tank by use of radar. The radar transmits microwaves towards the surface and receives microwaves reflected by the surface and is adapted to transmit and receive microwaves within two widely separated frequency bands. Widely separated frequency bands are chosen to utilize the differences in attenuation due to foam on the surface and the differences in beam-width or other disturbances. The ratio between the center frequencies of the two widely separated frequency bands can be quantified as at least greater than 1.5:1 or preferably greater than 2:1.

*Allowable Subject Matter*

2. Claims 1, 3-19, 22-41 are allowed.

*Reasons for Allowance*

3. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance of the claims 1, 3-19, 22-34 is the inclusion of level gauge adapted to transmit and receive microwaves on a first frequency band consisting of frequencies having a relatively high penetration through water and forming a relatively wide radiation beam, and is further adapted to transmit and receive said microwaves on at least one second frequency band consisting of frequencies having a relatively low penetration through water and forming a relatively narrow radiation beam.

The primary reason for allowance of the claim 35 is the inclusion of level gauge adapted to transmit and receive microwaves on a first frequency band, which consists of frequencies below 12.4 GHz, and said level gauge is further adapted to transmit and receive microwaves on at least one second frequency band, which consists of frequencies above 22 GHz.

The primary reason for allowance of the claims 36-41 is the inclusion of level gauge adapted to transmit and receive microwaves on a first frequency band, wherein the center frequency of said first frequency band is about 10 GHz or below, and said level gauge is further adapted to transmit and receive microwaves on at least one second frequency band, wherein a center frequency of said second frequency band is about 25 GHz or above.

### *Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Burger et al. (US 5,659,321)(cited by applicant) discloses level measuring device using microwaves by generating low frequency microwave signal at 5.8 GHz and mixing the low frequency signal with a second microwave signal to produce a third high frequency microwave signal around 24 GHz which is radiated by antenna 7 into the surface of object 8 whose distance R is measured. Burger et al. does not disclose level measuring device adapted to transmit and receive microwaves on a first frequency band consisting of frequencies having a relatively high penetration through water and forming a relatively wide radiation beam, and is further adapted to transmit and receive said microwaves on at least one second frequency band consisting of frequencies having a relatively low penetration through water and forming a relatively narrow radiation beam.

Schultheiss (US 20020020216 A1) )(cited by applicant) discloses device for measuring the level of a substance comprising transmitter for transmitting signals to the substance at a plurality of frequencies, and receiver for receiving echo signals from the substance at the plurality of frequencies and evaluating echo signals to determine the level of substance. Schultheiss does not disclose level measuring device adapted to transmit and receive microwaves on a first frequency band consisting of frequencies having a relatively high penetration through water and forming a relatively wide radiation beam, and is further adapted to transmit and

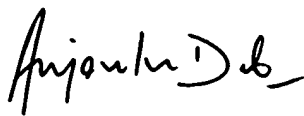
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receive said microwaves on at least one second frequency band consisting of frequencies having a relatively low penetration through water and forming a relatively narrow radiation beam.

Arndt (US 20020101373 A1) discloses method of fuel level detection in a tank by microwaves.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is 571-272-2228. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lefkowitz Edwards can be reached at 571-272-2180.



**Anjan K. Deb**

Primary Patent Examiner

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10/7/05

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